REMARKS

Claims 50, 52-56, 63 and 65 are pending in this application. By this Amendment, claims 50, 52-56, 63 and 65 are amended and claims 51, 57-61, 66 and 67 are cancelled. Support for the amendments to claims 50, 52-56, 63 and 65 can be found, for example, in the instant specification at page 12, lines 16 to 24; page 14, line 15 to page 17, line 3, page 17, line 24 to page 18, line 11; and page 20, line 27 to page 21, line 4. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

Rejections Under 35 U.S.C. §102

A. Kimura

The Office Action rejects claims 50-55 under 35 U.S.C. §102(e) over U.S. Patent No. 6,228,480 to Kimura et al. ("Kimura"). Claim 51 is cancelled, rendering the rejection moot as to that claim. As to the remaining claims, Applicants respectfully traverse the rejection.

Claim 50 recites "[a] wettability changing layer comprising a wettability changing material, wherein: the layer has a thickness of 100 to 1,000 angstroms; the layer is conductive; the layer is capable of charge-injection and/or charge-transfer; and wettability of the layer changes when light energy is applied to the layer." Kimura does not teach or suggest such a wettability changing layer.

The Office Action asserts that Kimura discloses a wettability changing layer including a photocatalyst. The Office Action further asserts that a layer having a capability of charge-injection or charge transfer would not be different from the layer disclosed in Kimura. Notwithstanding these assertions, Kimura does not anticipate and would not have rendered obvious claim 50.

Claim 50 requires a wettability changing layer that has a thickness of from 100 to 1,000 angstroms and that is conductive. Kimura discloses a photocatalyst layer having

surface attributes (e.g., adhesiveness and oil decomposing properties) that can be changed by applying light energy. *See, e.g.*, Table 9. The photocatalyst layer of Kimura is disclosed as being useful in antifouling, cleaning water, deodorization, pasteurization, treatment of waste water, etc. *See, e.g.*, column 1, lines 6 to 10. However, nowhere does Kimura teach or suggest that the disclosed photocatalyst layer has a thickness of 100 to 1,000 angstroms. Rather, Kimura discloses that photocatalyst layers having thicknesses such as recited in claim 50 (0.1 μm/1,000 Å or less) are undesirable because ultraviolet light directed at the layer will penetrate to other layers. *See* column 10, line 64 to column 11, line 2. With respect to the thickness of the wettability layer, the present inventors discovered that a thickness of 100 angstroms or more provides good wettability patterning characteristics, while a thickness of 1,000 angstroms or less provides good charge-injection and/or charge-transfer characteristics. In addition, there is no teaching or suggestion in Kimura that the disclosed photocatalyst layer is conductive, is capable of charge-injection and/or charge-transfer, or has the property of changing in wettability when light energy is applied to the layer. Accordingly, Kimura fails to teach or suggest each and every feature of claim 50.

The present inventors created a wettability changing layer, such as recited in claim 50, that (1) is capable of charge-injection and/or charge-transfer, and (2) can form patterns including areas of differing wettability in response to pattern-wise light emission. The charge-injection and/or charge-transfer characteristics of the wettability changing layer are independent of the layer's ability to form patterns of differing wettability, so it is possible to use the layer as a component of, for example, an electroluminescent device. Because the wettability changing layer can form patterns of differing wettability, it is possible to form additional functional layers on the wettability changing layer without employing complicated techniques, such as etching. Accordingly, the present inventors created a novel, non-obvious wettability changing layer.

Claim 50 is not anticipated by Kimura. Claims 52-55 depend from claim 50 and, thus, also are not anticipated by Kimura. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Murasawa

The Office Action rejects claims 50-52, 54-58 and 60, 61 and 63 under 35 U.S.C. §102(b) over EP 0 663 064 to Murasawa et al. ("Murasawa"). Claims 51, 57, 58, 60 and 61 are cancelled, rendering the rejection moot as to those claims. As to the remaining claims, Applicants respectfully traverse the rejection.

Claim 50 is set forth above. The Office Action asserts that Murasawa discloses a wettability changing layer including a photocatalyst. Notwithstanding this assertion, Murasawa does not anticipate and would not have rendered obvious claim 50.

Murasawa discloses a photocatalyst composite that is capable of decomposing various pollutants when irradiated with light. *See, e.g.*, Tables 3 and 4. However, nowhere does Murasawa teach or suggest that the disclosed photocatalyst composite has a thickness of 100 to 1,000 angstroms. In fact, Murasawa does not disclose that the photocatalyst composite should have any particular thickness. As is evident, e.g., from the greater thicknesses of the layers disclosed in Kimura discussed above, the particular thicknesses recited in claim 50 are not inherent the teachings of Murasawa. Moreover, as discussed above, a thickness of 100 angstroms or more provides good wettability patterning characteristics, while a thickness of 1000 angstroms or less provides good charge-injection and/or charge-transfer characteristics -- a fact which is not appreciated by Murasawa. In addition, there is no teaching or suggestion in Murasawa that the disclosed photocatalyst layer is conductive, is capable of charge-injection and/or charge-transfer, or has the property of changing in wettability when light energy is applied to the layer. Accordingly, Murasawa fails to teach or suggest each and every feature of claim 50.

Claim 50 is not anticipated by Murasawa. Claims 52, 54-56 and 63 depend from claim 50 and, thus, also are not anticipated by Murasawa. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

C. Kobayashi

The Office Action rejects claims 50-55 and 65 under 35 U.S.C. §102(b) over U.S. Patent No. 6,294,313 to Kobayashi et al. ("Kobayashi"). Claim 51 is cancelled, rendering the rejection moot as to that claim. As to the remaining claims, Applicants respectfully traverse the rejection.

Claim 50 is set forth above. The Office Action asserts that Kobayashi discloses a wettability changing layer including a photocatalyst and a charge facilitator. Notwithstanding this assertion, Kobayashi does not anticipate and would not have rendered obvious claim 50.

Kobayashi discloses a photocatalyst-containing layer that is suitable for use in a structure for pattern formation, a color filter, a lens or a lithography plate. *See, generally*, columns 5 to 10. However, nowhere does Kobayashi teach or suggest that the disclosed photocatalyst-containing layer has a thickness of 100 to 1,000 angstroms. In fact, Kobayashi merely discloses that the photocatalyst-containing layer should have a thickness of not more than 10 μm (100,000 Å), and the thinnest photocatalyst-containing layer provided in the examples of Kobayashi had a thickness of 0.2 μm (2,000 Å). This broad disclosure of thicknesses cannot fairly be said to teach or suggest a wettability changing layer having a thickness of from 100 to 1,000 angstroms. Kobayashi does not disclose the particular advantages of this narrower range discovered by the present inventors -- thicknesses of 100 angstroms or more to provide good wettability patterning characteristics, while thicknesses of 1000 angstroms or less provide good charge-injection and/or charge-transfer characteristics. In addition, there is no teaching or suggestion in Kobayashi that the disclosed photocatalyst layer is conductive, is capable of charge-injection and/or charge-transfer, or has the property

of changing in wettability when light energy is applied to the layer. Accordingly, Kobayashi fails to teach or suggest each and every feature of claim 50.

Claim 50 is not anticipated by Kobayashi. Claims 52-55 and 65 depend from claim 50 and, thus, also are not anticipated by Kobayashi. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Rejection Under 35 U.S.C. §103

The Office Action rejects claims 56-61 and 63 under 35 U.S.C. §103(a) over Kobayashi in view of Murasawa. Claims 57-61 are cancelled, rendering the rejection moot as to those claims. As to the remaining claims, Applicants respectfully traverse the rejection.

As discussed above, none of Kimura, Murasawa and Kobayashi teaches or suggests a wettability changing layer in which the layer has a thickness of 100 to 1,000 angstroms; the layer is conductive; the layer is capable of charge-injection and/or charge-transfer; and wettability of the layer changes when light energy is applied to the layer. As each of the references is deficient in this regard, no combination of the references can teach or suggest each and every feature of claim 50.

Claim 50 would not have been rendered obvious by Kobayashi and Murasawa. Claims 56 and 63 depend from claim 50 and, thus, also would not have been rendered obvious by Kobayashi and Murasawa. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 50, 52-56, 63 and 65 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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